

# VIKAS PUBLIC SCHOOL, RANIA

## SA-1 in Mathematics

**Class-10<sup>th</sup>**

**Time : 2 hr.  
M. Marks=40**

### General Instructions :

1. The question paper contains three parts A, B and C.
2. Section A consists of 20 questions of 1 mark each. Attempt any 16 questions.
3. Section B consists of 20 questions of 1 mark each. Attempt any 16 questions.
4. Section C consists of 10 questions based on two Case Studies. Attempt any 8 questions.
5. There is no negative marking.

Sr. No.	<u>QUESTIONS</u> <u>SECTION-A</u>	Marks
1.	A box contains cards numbered 6 to 50. A card is drawn at random from the box. The probability that the drawn card has a number which is a perfect square like 4,9....is (a) $\frac{1}{4}$ (b) $\frac{2}{15}$ (c) $\frac{4}{45}$ (d) $\frac{1}{9}$	<u>1</u>
2.	If $\sin\theta = x$ and $\cos\theta = y$ , then $\tan\theta$ is (a) $xy$ (b) $\frac{1}{xy}$ (c) $\frac{y}{x}$ (d) $\frac{x}{y}$	<u>1</u>
3.	A fair die is thrown once. The probability of even number is (a) 0 (b) $\frac{1}{3}$ (c) $\frac{3}{4}$ (d) 1	<u>1</u>
4.	The Decimal representation of $\frac{23}{5^2 \times 2^3}$ (i) Terminating (ii) Non Terminating (iii) Both (iv) None	<u>1</u>
5.	The LCM of $2^3 \times 3^2$ and $2^2 \times 3^2$ is. (i) $2^3$ (ii) $3^3$ (iii) $2^3 \times 3^2$ (iv) $2^2 \times 3^2$	<u>1</u>
6.	The HCF of two number is 18 and their product is 12960. Their LCM will be ; (i) 420 (ii) 600 (iii) 720 (iv) 800	<u>1</u>
7.	The Co-ordinates of the point P divides the line segment joining the points A (1, 3) and B (4, 6) in the ratio 2: 1 are: (i) (2, 4) (ii) (4, 6) (iii) (4, 2) (iv) (3, 5)	<u>1</u>
8.	The Prime Factorisation of 3825 is: (i) $3 \times 5 \times 5 \times 21$ (ii) $3^2 \times 5^2 \times 35$ (iii) $3^2 \times 5^2 \times 17$ (iv) $3^2 \times 17 \times 25$	<u>1</u>
9.	In a throw of a pair of dice ,the probability of the same number on both die is (i) $\frac{1}{6}$ (ii) $\frac{1}{3}$ (iii) $\frac{1}{2}$ (iv) 0	<u>1</u>
10.	If -1 is zero of the polynomial $p(x) = x^2 - 7x - 8$ , then the other zero is (i) - 8 (ii) - 7 (iii) 1 (iv) 8	<u>1</u>

11.	The mid point of $(2p, 4)$ and $(2, 2q)$ is $(2, 6)$ . Find the value of $p + q$ (i) 5 (ii) 6 (iii) 7 (iv) 8	<u>1</u>
12.	If $x + y = 14$ and $x - y = 4$ ; find the value of $x$ and $y$ . (i) $(9, 5)$ (ii) $(-9, -5)$ (iii) $(9, 0)$ (iv) $(0, 4)$	<u>1</u>
13.	The distance between the points $(0, 5)$ and $(-5, 0)$ is: (i) 5 (ii) $5\sqrt{2}$ (iii) $2\sqrt{5}$ (iv) 10	<u>1</u>
14.	If $\cos A = \frac{4}{5}$ then find the value of $\tan A$ is (i) $\frac{3}{5}$ (ii) $\frac{3}{4}$ (iii) $\frac{4}{3}$ (iv) $\frac{5}{3}$	<u>1</u>
15.	If an event can not occur, then its probability is (i) 1 (ii) $\frac{3}{4}$ (iii) $\frac{1}{2}$ (iv) 0	<u>1</u>
16.	$P(E) + P(\overline{E}) = \underline{\hspace{1cm}}$ (i) 1 (ii) 2 (iii) -1 (iv) 0	<u>1</u>
17.	If $a^2 = \frac{23}{25}$ then $a$ is (i) rational (ii) irrational (iii) whole number (iv) integer	<u>1</u>
18.	If $LCM(x, 18) = 36$ and $HCF(x, 18) = 2$ , then $x$ is (i) 2 (ii) 3 (iii) 4 (iv) 5	<u>1</u>
19.	A card is drawn from a well shuffled deck of cards. What is the probability that the card drawn is ace of spade. (i) $\frac{2}{13}$ (ii) $\frac{1}{13}$ (iii) $\frac{1}{52}$ (iv) 0	<u>1</u>
20.	What is the length of an altitude of an equilateral triangle of side 8cm? (i) $2\sqrt{3}$ (ii) $3\sqrt{3}$ (iii) $4\sqrt{3}$ (iv) $5\sqrt{3}$	<u>1</u>
<b>SECTION-B</b>		
21.	$\sin 2A = 2 \sin A$ is true when $A$ is equal to (i) $45^\circ$ (ii) $60^\circ$ (iii) $30^\circ$ (iv) $0^\circ$	<u>1</u>
22.	$9 \sec^2 A - 9 \tan^2 A$ is equal to (i) 9 (ii) 1 (iii) 0 (iv) -1	<u>1</u>
23.	The distance between the point $P(1, 4)$ and $Q(4, 0)$ is (i) 4 (ii) 5 (iii) 6 (iv) $3\sqrt{3}$	<u>1</u>
24.	The points $(1, 1), (-2, 7)$ and $(3, -3)$ are (i) vertices of an equilateral triangle (ii) collinear (iii) vertices of an isosceles triangle (iv) none of these	<u>1</u>
25.	HCF of 8, 9, 25 is (i) 8 (ii) 9 (iii) 25 (iv) 1	<u>1</u>
26.	The set $A = \{0, 1, 2, 3, 4, \dots\}$ represents the set of (i) Whole Number (ii) Natural number (iii) Even Number (iv) none	<u>1</u>
27.	Which number is divisible by 11? (i) 1516 (ii) 1452 (iii) 1011 (iv) 1121	<u>1</u>

28.	The Zeros of quadratic polynomial $x^2 + 7x + 12$ is (i) 4 & 3                      (ii) $-4$ & $-3$ (iii) 4 & $-3$ (iv) 0 & 1	<u>1</u>
29.	In a quadratic polynomial sum of roots $\alpha + \beta =$ ____ (i) $\frac{b}{a}$ (ii) $\frac{c}{a}$ (iii) $-\frac{b}{a}$ (iv) None	<u>1</u>
30.	If two different dice are rolled together, the probability of getting an even number on both dice is: (i) $\frac{1}{36}$ (ii) $\frac{1}{2}$ (iii) $\frac{1}{6}$ (iv) $\frac{1}{4}$	<u>1</u>
31.	$(6 + 5\sqrt{3}) - (4 - 3\sqrt{3})$ is (i) An irrational Number                      (ii) Natural number                      (iii) Rational Number                      (iv) none	<u>1</u>
32.	If LCM (77, 99) = 693, then HCF (77, 99) is (i) 11                      (ii) 7                      (iii) 9                      (iv) 22	<u>1</u>
33.	$7 \times 11 \times 13 \times 15 + 15$ is a (i) Prime Number                      (ii) Composite number                      (iii) Rational Number                      (iv) none	<u>1</u>
34.	Find roots of quadratic equation $t^2 - 15 = 0$ (i) $\pm\sqrt{15}$ (ii) $\sqrt{15}$ (iii) 0, 15                      (iv) $-15, 15$	<u>1</u>
35.	The value of $\cos 0^\circ \cdot \cos 1^\circ \cdot \cos 2^\circ \cdot \cos 3^\circ \dots \cos 89^\circ \cos 90^\circ$ is (i) 1                      (ii) $-1$ (iii) 0                      (iv) $1/2$	<u>1</u>
36.	Find the value of $2\tan^2 45^\circ + \sin^2 30^\circ - \cos^2 60^\circ$ is (i) 0                      (ii) 2                      (iii) $-2$ (iv) $5/4$	<u>1</u>
37.	If $\tan(A + B) = \sqrt{3}$ and $\tan(A - B) = \frac{1}{\sqrt{3}}$ , then find the value of A and B. (i) $90^\circ, 0^\circ$ (ii) $45^\circ, 15^\circ$ (iii) $60^\circ, 30^\circ$ (iv) None	<u>1</u>
38.	Find the coordinates of the points which divides the join of (-1,7) and (4,-3) in the ratio 2:3 (i) (1,3)                      (ii) (3,1)                      (iii) $(-1, -3)$ (iv) $(-3, -1)$	<u>1</u>
39.	If $\tan A = 1/\sqrt{3}$ then find the value of A. (i) $45^\circ$ (ii) $30^\circ$ (iii) $60^\circ$ (iv) $0^\circ$	<u>1</u>
40.	Product of the zeros ( $\alpha\beta$ ) in a quadratic polynomial is=_____. (i) $\frac{b}{a}$ (ii) $\frac{c}{a}$ (iii) $-\frac{b}{a}$ (iv) None	<u>1</u>

## SECTION-C

### Case study based questions

**Section C consists of 10 questions of 1 mark each. Any 8 questions are to be attempted.**

#### **Case Study:-1**

A park has swings made of rubber and iron chain. Sachin who is studying in class X have noticed that this is a Mathematical shape, he has learned in Maths class.

Following questions raised in his mind. Answer the questions by observing both pictures :

